MULTIMEDIA UNIVERSITY

STUDENT IDENTIFICATION NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

BKC2024 – DATABASE MANAGEMENT SYSTEMS

(All Sections / Groups)

13 OCTOBER 2016
2:30 pm-4:30 pm
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This Question paper consists of 4 pages with 5 Questions only.

2. Attempt **FOUR** out of **FIVE** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

QUESTION 1

a) List and describe with examples, **FIVE (5)** main parts of a database system. (10 marks)

b) Lock granularity describes the different lock levels supported by a database management systems (DBMS). Identify and discuss the **FIVE (5)** different locking levels by relating it to a simple database environment. (15 marks)

(Total: 25 marks)

QUESTION 2

a)

i) Identify **FIVE (5)** sources of business rules. (5 marks)

ii) Create a basic Crow's Foot entity relationship (ER) diagram (i.e. without any attributes) to include the following business rules:

- Each sales representative writes many invoices.
- Each invoice is written by one sales representative.
- Each sales representative is assigned to one department.
- Each department has many sales representatives.
- Each customer can generate many invoices.
- Each invoice is generated by one customer.

(11 marks)

b) Explain **SIX (6)** characteristics of a relational table and draw a complete example of a relational table to support your answer. (9 marks)

(Total: 25 marks)

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QUESTION 3

a) Consider the following Student Examination Result Slip:

STUDENT EXAM RESULT SLIP

Student No.: S9990 **Exam Period**: October 2016
Name: May Tan
IC No.: 891211-04-2468
Address: 12-A, Taman Bunga Raya, Bukit Beruang, 75450 Melaka

No.	Subject Code	Description	Grade	GPA	Result Status
1	CS211	Systems Analysis and Design	A	4	Pass
2	CS217	Database System	A	4	Pass
3	CS213	Software Engineering	B	3	Pass

Derive the above relations in unnormalized form (UNF), and normalize it from UNF to third normal form (3NF). Show all steps taken to normalize the relations and clearly state any assumptions made (if necessary). (9 marks)

b) Based on the set of 3NF relations derived in (a), draw a **complete ER diagram**. Make sure that all the entities, attributes, relationships and connectivities are included in your ER diagram. (6 Marks)

c) Distinguish operational data and decision support data based on its **FIVE (5)** data characteristics. (10 marks)

(Total: 25 marks)

QUESTION 4

a) Compare and contrast between the system development life cycle (SDLC) and the database life cycle (DBLC) with the aid of diagrams. (15 marks)

b) Explain **FIVE (5)** security safeguards to protect the DBMS against service degradation. (10 marks)

(Total: 25 marks)

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QUESTION 5

Based on the following table, write appropriate SQL statements to carry out the following tasks:

FRUIT Table

FRUIT_CODE	FRUIT_NAME	COST	PRICE	CONTAINER_SIZE	QUANTITY_ON_HAND
5011	Guava	RM50	RM70	10	156
5012	Mango	RM80	RM110	10	105
5013	Star fruit	RM66	RM87	10	398
5014	Banana	RM44	RM63	15	267
5015	Lemon	RM78	RM98	10	476

a) Create the FRUIT table, using the following table definition: (8 marks)

Field Name	Data Type	Size	Remarks
FRUIT_CODE	Number	-	Primary key
FRUIT_NAME	Text	20	Required
COST	Number	-	-
PRICE	Number	-	-
CONTAINER_SIZE	Number	-	-
QUANTITY_ON_HAND	Number	-	-

b) Alter the size of the FRUIT_NAME field from the current 20 characters to 30 characters. (2 marks)

c) Enter the details of a new record that is listed below into the FRUIT table. (2 marks)

FRUIT_CODE	FRUIT_NAME	COST	PRICE	CONTAINER_SIZE	QUANTITY_ON_HAND
6666	Dragon fruit	RM90	RM120	15	123

d) Update the PRICE of 'FRUIT_CODE: 5011 to '75'. (3 marks)

e) Select all the details of fruits that do NOT have the container size of 10. (2 marks)

f) Display the value of the lowest QUANTITY_ON_HAND. (1 mark)

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g) Select the FRUIT_CODE, FRUIT_NAME, COST, PRICE and QUANTITY_ON_HAND of fruits with a selling price of at least RM80. The results are to be sorted out according to the PRICE in descending order. (3 marks)

h) Select all the details of fruits where the CONTAINER_SIZE are 10 and the QUANTITY_ON_HAND are below 200. (3 marks)

i) Delete the entire FRUIT table. (1 mark)

(Total: 25 marks)

End of Paper